LIABILITY (RISK) MANAGEMENT: Ensuring Financial Responsibility for GS

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Risk Management

- **Risk management is predicated on:**
  - **Forecasting the range of possible outcomes,**
  - **Recognizing that forecasts can be wrong,**
  - **Weighing the consequences of being wrong,**

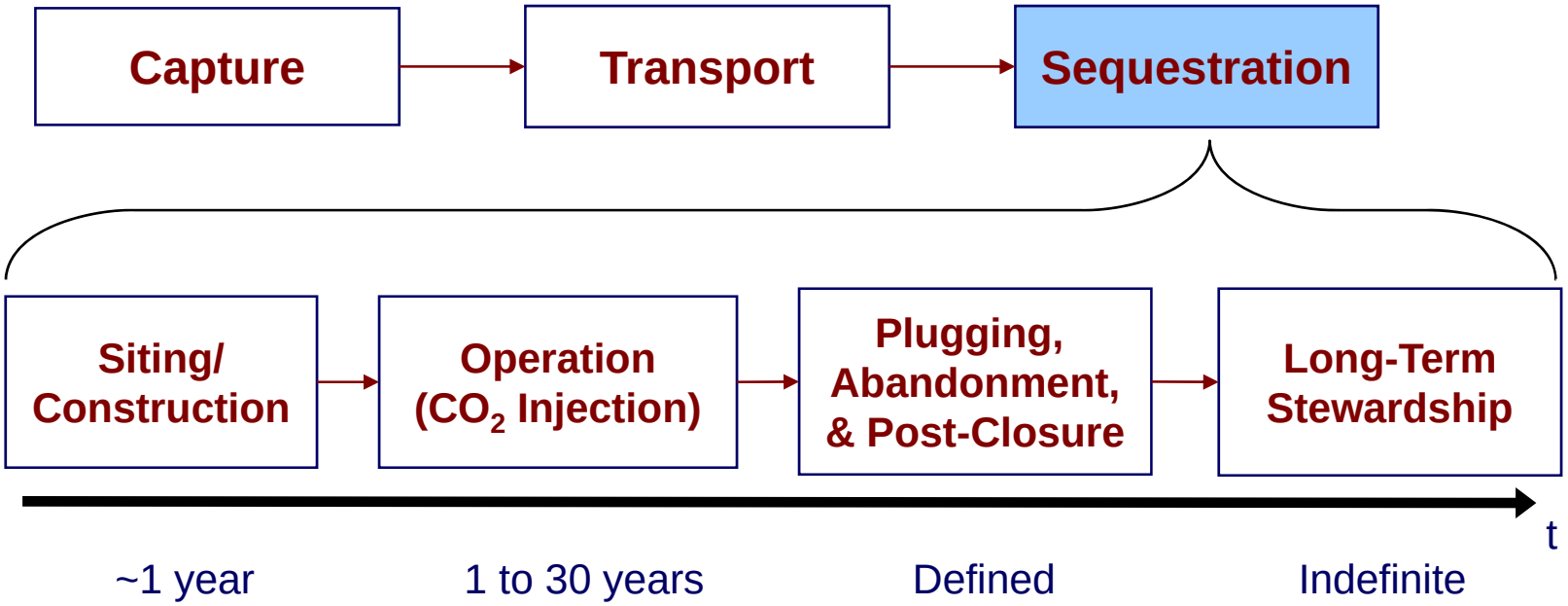
And then,

- **Limiting the magnitude of the consequence(s) or finding ways to hedge the bet . . .**

Common Language? Are you Sure?

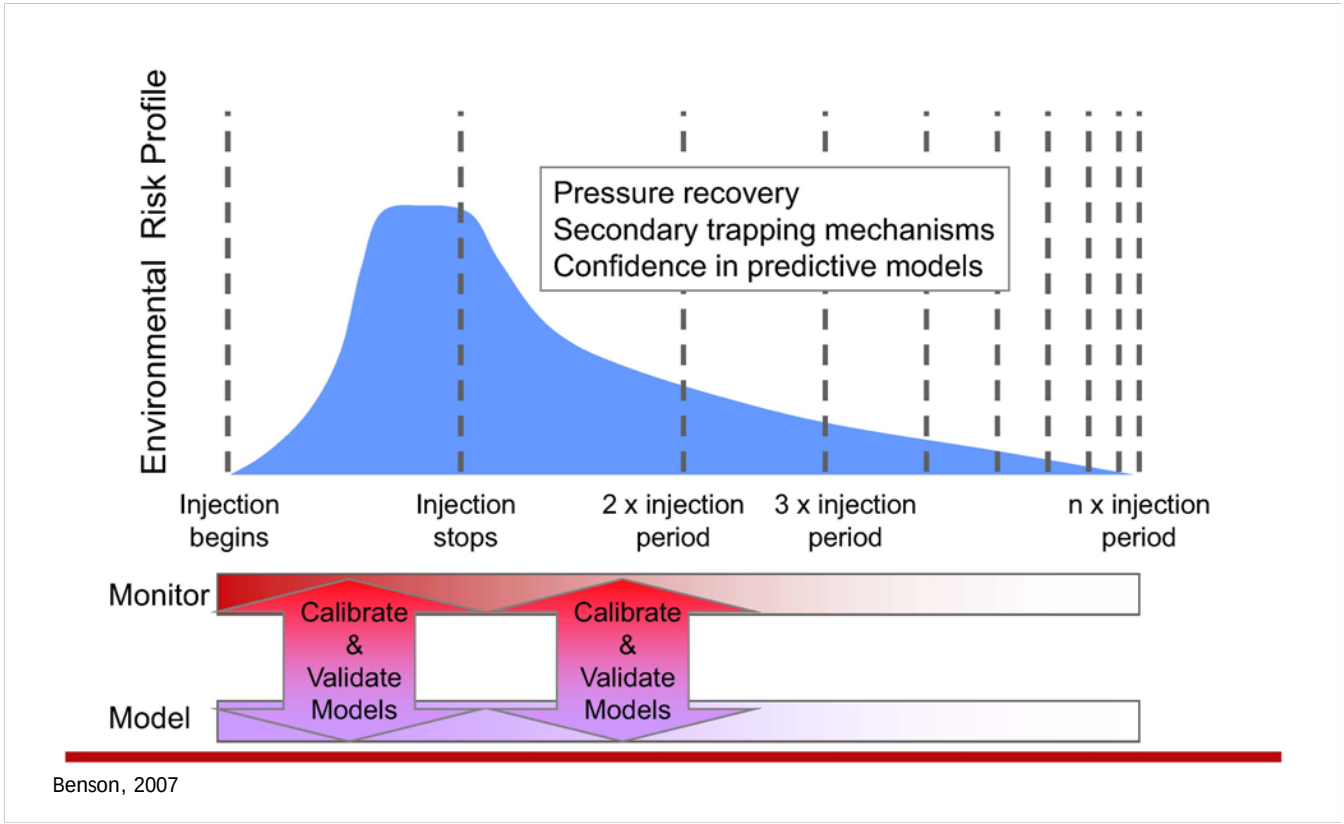
- **RISK –** Of what?
  - Non-performance / default? Underperformance? Defect? Other contractual liability? Tort Liability for Bodily Injury (BI), (first party) Property Damage (PD), Ecological / Natural Resource Damage? Endangered Species Issues?
  - **Moral Hazard** – Will the party be better off in the event of loss / failure? Is the party indifferent, and therefore won't try to prevent or mitigate certain losses?
- **FINANCIAL RESPONSIBILITY –** To whom, for what? When?
- **LIABILITY –** Statutory? Common law? Civil law jurisdiction?
- **HARM / INJURY –** BI or PD or other?
- **DAMAGES –** Nature? Type?
- **INDEMNITY –** Contractual? Governmental? First dollar? Excess of retained amount? Insurance? Public / Private?

GS Project Life Cycle



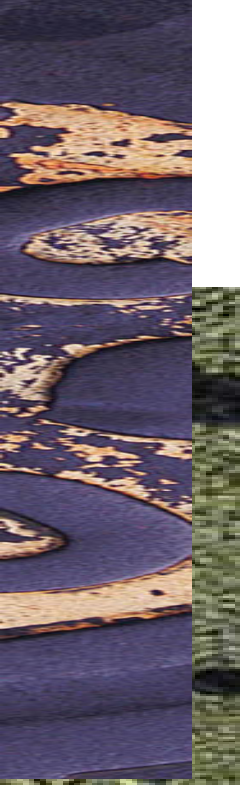
- Industry Sectors – Utility v. EOR/EGR
- Early movers (pilots) v. commercial-scale deployment
- Existing statutory implications – SDWA, CAA, RCRA, CERCLA

Risk Profile for GS Sites



Benson, 2007

- **Shape of the curve will vary by GS site**
- Early movers (pilots) will site in favorable zones
- **Liability frameworks** must balance incentives that foster early deployment with the potential for adverse site selection (with increasingly risky profiles) due to **moral hazard** as commercial-scale deployment evolves.



Liability
(Uncertainty of Interplay with Existing Statutes)

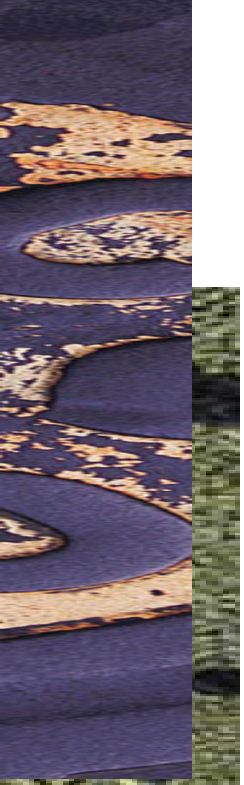
- **Numerous Potential Claimants, Causes of Action.**
  - Nuisance, trespass, negligence, other torts
  - Statutory liability (SDWA, CAA, RCRA, CERCLA, ESA; local statutes; potential “cap” of Cap-and-Trade)
  - Contractual and “New” Potential Carbon Market Exposures – required purchase of offsets, penalties / fines
- **Spans State & Federal Authority**
  - Jurisdiction, nature of the harm and attendant damages will interact to determine liability, compensability, and which (if any) party can transfer, release or assume liability.

Financial Responsibility (Certainty of a Sort…)

- **An effective liability (risk) management framework will assure funds are available to pay for the necessary activity to:**
  - **Minimize potential for releases** from the containment zone over the long-term (post operational acts and confirmed stabilization); and
  - **Detect problems** before they adversely impact public welfare or the environment (MMV).
- **The remaining challenge?** Corrective (remedial) action, and to the extent necessary how compensatory damages will be redressed & up to what limit?

Liability (Risk) Management Options

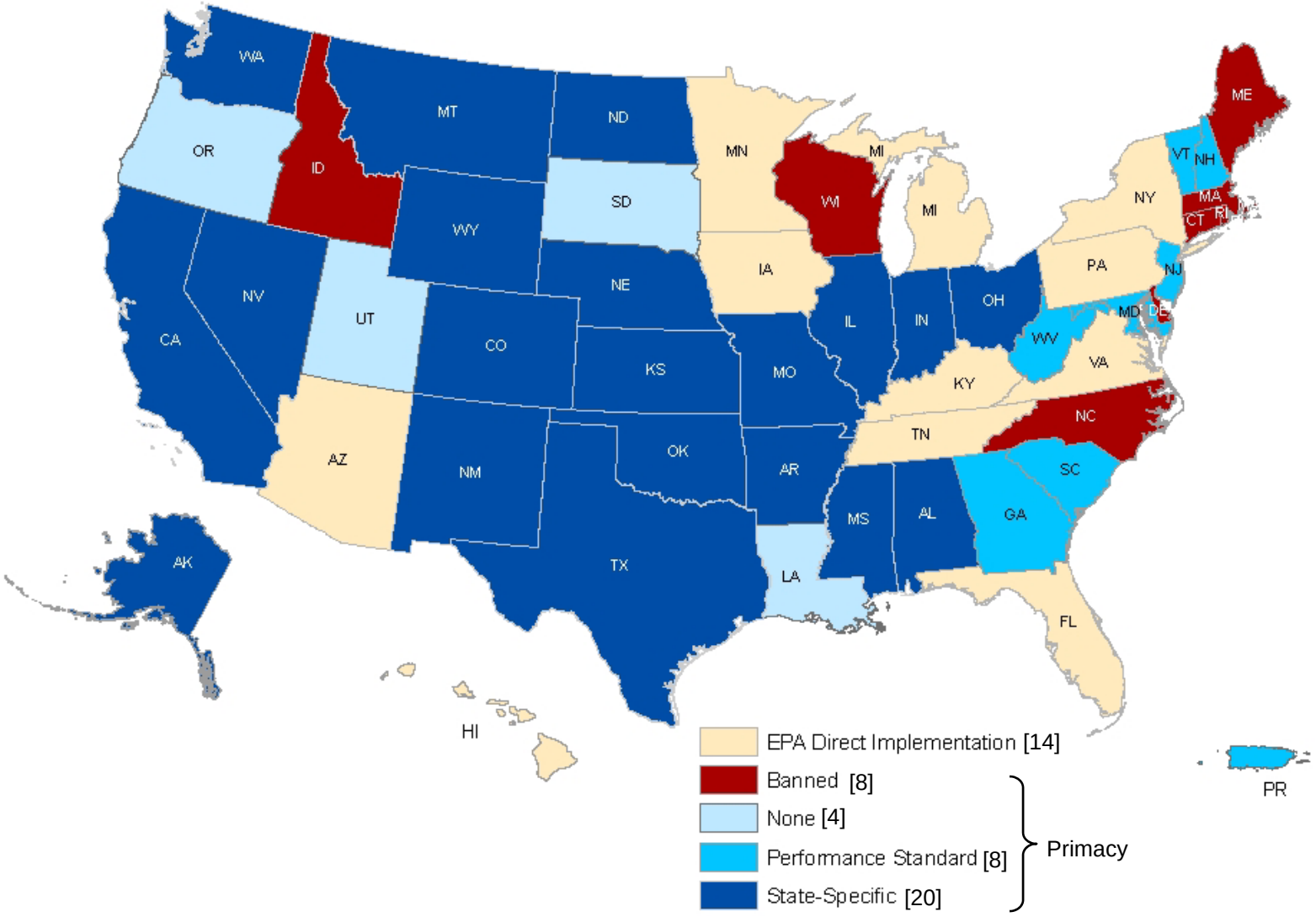
Financial Responsibility Mechanisms	GS Project Phases		
	Operation (CO_2 Injection)	Closure & Post-Closure	Long-Term Stewardship (<u>after</u> prescribed post-closure)
1. Third-Party Instruments (Trust Funds, LOCs, Insurance, Bonds)	✔	✔	✔
2. Self-Insurance (Financial Test, Corporate Guarantee)	✔	✔	✘
3. Private/Public Frameworks ▸ Trust/Compensation Funds ▸ Insurance Models	✘	✘	✔



FR Analogs. Relevancy to CCS?

- Underground natural gas storage may be an appropriate physical analog to CCS; Lack of consistent framework poses notable limitations.
- UIC Class II, EOR and EGR
  - Performance-based standard at 40 CFR 144.28(d)
  - Owners/Operators “must maintain financial responsibility and resources to close, plug and abandon the underground injection operation.”
- Proposed CCS Rule – Performance Based

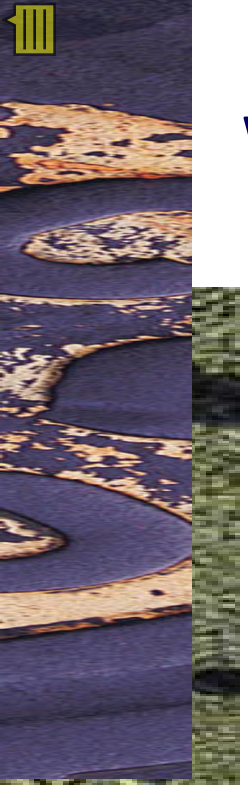
FR Analog: UIC Class II



Note, Direct Implementation includes DC; and Performance Standard includes PR

Which Brings Us to Indiana…

- EPA directly implements the UIC program for Classes I, III, and V.
- Indiana maintains Primacy for UIC Class II.
  - 1,285 Class II wells as of July 11, 2006
- Allowable FA instruments at §14-37-6 include Surety Bond, Certificate of Deposit, Cash.
  - Limited FA regulatory requirements and no requirements for issuing financial institution.
  - Silent on Letters of Credit, Insurance, Self-Insurance (Financial Test, Corporate Guarantee)



Which Brings Us to Indiana…

- §14-37-6-1. Bonds are required if:
  - No (2-year) history of operation with the division;
  - Permit has been revoked;
  - Annual well fees from previous assessments are unpaid; or
  - Unpaid civil penalty assessments.
- Absolute Dollar Value of FA Instrument
  - $2,500 per well
  - $45,000 for a group of wells

Notable Liability Frameworks:

Each Has Strengths and Weaknesses; Risk Profile is Key

<Public / Private Frameworks>

1957 | Price-Anderson
Nuclear Indemnity

1968 | NFIA
Indemnity/Risk Pool

2002 | SAFETY ACT
Risk/Litigation Management

<Compensation (Trust) Funds>

1974 | SDWA
UIC Program

1980/1986 | CERCLA/SARA
Superfund

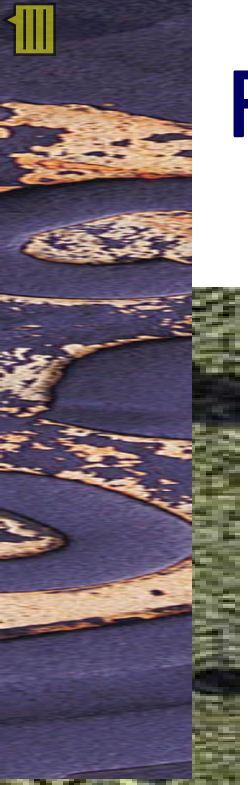
1990 | TAPAA/OPA
OSLTF / TAPLF

2007 | IRGC / IOGCC
State Compensation Funds

Recommended CCS FR Framework

- **Operational Phase** – Siting, Operation (Compression & Injection), Delimited Closure
  - Single Goal Financial Instruments – Surety Bonds, Insurance, Letters of Credit, Self-Insurance (Financial Test, Corporate Guarantee)
  - Cost Estimation Requirements
  - Delimiting Requirements for Issuing Institutions
- **Long-Term Stewardship Phase** – Post-Injection, Post-Site Certification
  - Three-Part Solution – Safety Board, CCS Trust, Enabling Legislation

Recommended CCS Framework



PART 1. CCS SAFETY BOARD

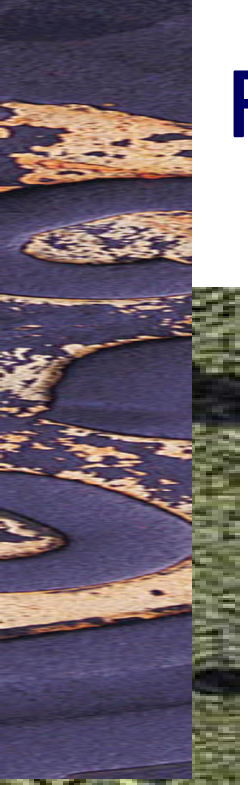
Design Goal. Ensure siting/operating decisions that consider risk and minimize potential for residual injury at time of CCS site transfer.

Attributes.

- Private/Public board, chartered as a government corporation.
- Comprises no less than 9 members – technical, legal, financial, state/federal
- Term limits no less than 6 years.

Charge.

- Approve siting for CCS projects, including 'go' v. 'no-go' decisions.
- Oversee design and management of CCS projects.
- Serve as arbiter for existing agencies authorized to address CCS project issues of technical safety, economics, climate and ecology.
- Certify completion of key project milestones (e.g., site closure, post-closure).
- Accept eventual title to CCS sites.
- Maintain financial and administrative management authority over CCS National Trust.



Recommended CCS Framework

PART 2. CCS NATIONAL TRUST

Design Goal. Ensure availability of funds to pay for future (un)expected costs of long-term care and delimited compensatory damages.

Attributes.

Financed through a combination of:

1) Initial authorizing funds
2) A flat per unit fee on CO2 sequestered during the life of the CCS facility; and/or
3) A transaction fee for carbon trades.

- Fee collection suspended when trust reaches a maximum dollar threshold.
- Balance of funds mandated between a maximum (ceiling) and minimum (floor) financial threshold.

Charge.

- Address prospective risk, not known existing loss.
- Provide funds to pay for long-term care expenses associated with corrective action and delimited compensatory damages resulting *after* the CCS facility is released from its post-closure obligations.
- Ensure trust balance and fund contributions map to expected value of expenses/financial consequences likely to be incurred over the long term.
- Trust balance should be re-evaluated when actual site-specific monitoring data become available, but no less frequently than every 3 years.

Recommended CCS Framework

ADDITIONAL ENABLING LEGISLATION	
▸ Establish Liability Provisions ▸ Identify Damage Thresholds ▸ Require Evidence of Financial Responsibility	▸ Provide for CCSSB Oversight Authority ▸ Allow for State Access to Funds in the CCS National Trust ▸ Address Miscellaneous Receipts Act Issues